CLAIMS

We claim:

1. A device for measuring glucose in a biological fluid, comprising:

a) a housing comprising an electronic circuit and at least two electrodes operatively connected to said electronic circuit; and

b) a sensor operably connected to said electrodes of said housing, said sensor comprising an apparatus for determining the amount of glucose in a biological sample, said glucose determining apparatus operably associated with said electrodes and comprising a membrane impregnated with an oxidase, a bioprotective membrane, said bioprotective membrane positioned more distal to said housing than said glucose determining apparatus and substantially impermeable to macrophages, and an angiogenic layer, said angiogenic layer positioned more distal to said housing than said bioprotective membrane.

2. The biological fluid measuring device of claim 1, wherein said sensor protrudes from said housing.

3. The biological fluid measuring device of claim 1, wherein the sensor further comprises a sensor interface dome.

4. The biological fluid measuring device of claim 1, wherein said membrane impregnated with oxidase comprises a resistance layer, an enzyme layer, an interference layer and an electrolyte layer.

5. The biological fluid measuring device of claim 4, wherein said resistance layer comprises a polymer membrane with a oxygen-to-glucose permeability ratio of approximately 200:1.

6. The biological fluid measuring device of claim 4, wherein said interference layer comprises a hydrophobic membrane substantially permeable to hydrogen peroxide.

7. The biological fluid measuring device of claim 4, wherein said interference layer comprises a hydrophobic membrane substantially impermeable to chemical compositions having a molecular weight substantially greater than hydrogen peroxide.

8. The biological fluid measuring device of claim 4, wherein said electrolyte layer comprises a semipermeable hydrophilic coating.

9. The biological fluid measuring device of claim 8, wherein said electrolyte layer comprises a curable copolymer of a urethane polymer and a hydrophilic film-forming polymer.

10. The biological fluid measuring device of claim 1, wherein said bioprotective membrane comprises polypropylene or polysulphone.

11. The biological fluid measuring device of claim 1, wherein said bioprotective membrane further comprises pores having a diameter of about 0.4 μm.

12. The biological fluid measuring device of claim 1, wherein said angiogenic layer is selected from the group consisting of hydrophilic polyvinylidene fluoride, mixed cellulose esters, polyvinyl chloride, polypropylene, polysulphone and polymethacrylate.

13. The biological fluid measuring device of claim 1, further comprising c) a securing element for securing said device to biological tissue, said securing element composed of a material selected from the group consisting of polyester, polypropylene cloth, polytetrafluoroethylene felts and expanded polytetrafluoroethylene.

14. The biological fluid measuring device of claim 13, wherein said securing element comprises a polyester velour.

15. The biological fluid measuring device of claim 1, wherein said housing comprising said electronic circuit is filled with material comprising waxes and resins wherein said waxes and resins secure said electronic circuit within said housing.

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